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Job No.: CECTC-BBMP-KRIDL-W.No.14-2015-16 21.04.2015

TEST REPORT ON DETERMINATION OF BITUMEN CHARACTERISTICS

CLIENT	:	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
AGENCY	:	**Technical Manager (West),** KRIDL, PIU, Bangalore.
NAME OF WORK	:	Re-Construction of roads and drain at 7th B Cross Diffence Colony connecting to Munikondappa Layout in Ward No. 14, Bagalagunte, BBMP, Bangalore.
REFERENCE	:	EE/DD/WO/373/2014-15 Dated: 31.03.2015
SAMPLE ID	:	Bitumen (Bituminous Concrete)
DATE OF TESTING	:	21.04.2015

The results of the tests conducted on the Bitumen sample for Bituminous Concrete

Sl.No	Description	Test Method as per IS	Test Result	Requirement as per IS: 73-2013
1	Penetration at 25^{0}C, 100g, 5 Sec 1/10 mm	IS: 1203-1978 (RA-2009)	89	80 to 100
2	Softening point, ^{0}C	IS: 1205-1978 (RA-2009)	47	Min. 40
3	Ductility at 27^{0}C, cm	IS: 1208-1978 (RA-2009)	100 >	Min. 75
4	Flash Point, ^{0}C	IS: 1209-1978 (RA-2009)	276	Min. 220

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Job No.: CECTC-BBMP-KRIDL-W.No.14-2015-16 21.04.2015

Aggregate Impact Value

IS: 2386 Part IV

Client	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, PIU, Bangalore.
Name of the Work	Re-Construction of roads and drain at 7th B Cross Diffence Colony connecting to Munikondappa Layout in Ward No. 14, Bagalagunte, BBMP, Bangalore.
Reference	EE/DD/WO/373/2014-15 Dated: 31.03.2015
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Bituminous Concrete
Date of Testing	21.04.2015

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	380	385	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	81	85	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	299	300	
4	Aggregate Impact value = percent fines 100* (W_2/W_1) percent	21.32	22.08	**21.70**

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Concrete is 24%

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ಟಿ.ದಾಸರಹಳ್ಳಿ ಉಪ-ವಿಭಾಗ
ಬಾಗಲಗುಂಟೆ, ಬಿಬಿಎಂಪಿ
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Job No.: CECTC-BBMP-KRIDL-W.No.14-2015-16 22.04.2015

Stripping Value of Road Aggregates (Static Immersion Test)

IS: 6241

Client	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, PIU, Bangalore.
Name of the Work	Re-Construction of roads and drain at 7th B Cross Diffence Colony connecting to Munikondappa Layout in Ward No. 14, Bagalagunte, BBMP, Bangalore.
Reference	EE/DD/WO/373/2014-15 Dated: 31.03.2015
Type of Mix	Bituminous Concrete
Date of Testing	22.04.2015

Type of binder : 80/100
Percentage of binder used : 5.00% by wt.
Total weight of aggregate : 200 g
Total weight of binder : 10.00 g
Temperature of water-bath : 40° C

Observation Number	Stripping, Percentage	Average, Percentage	Average Retained Coating, %
1	2.9	3.03	96.97
2	3.0		
3	3.2		

Comments:

→ Minimum allowable Aggregate retained coating for Bituminous Concrete is 95%

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Job No.: CECTC-BBMP-KRIDL-W.No.14-2015-16 22.04.2015

Aggregate Gradation Test

IS : 2386 Part I

Client	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, PIU, Bangalore.
Name of the Work	Re-Construction of roads and drain at 7th B Cross Diffence Colony connecting to Munikondappa Layout in Ward No. 14, Bagalagunte, BBMP, Bangalore.
Reference	EE/DD/WO/373/2014-15 Dated: 31.03.2015
Sample I / D	Hot Mix Plant, Bangalore
Type of Mix	Bituminous Concrete
Date of Testing	22.04.2015

Total Weight of Sample: **5565** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per MORTH
13.2	523	9.40	9.40	90.60	79 - 100	
9.5	543	9.76	19.16	80.84	70 - 88	
4.75	710	12.76	31.91	68.09	53 - 71	
2.36	645	11.59	43.50	56.50	42 - 58	
1.18	651	11.70	55.20	44.80	34 - 48	
0.600	667	11.99	67.19	32.81	26 - 38	
0.300	630	11.32	78.51	21.49	18 - 28	
0.150	328	5.89	84.40	15.60	12 - 20	
0.075	426	7.65	92.06	7.94	4 - 10	

Total Weight of Sample: **4845** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per MORTH
13.2	612	12.63	12.63	87.37	79 - 100	
9.5	465	9.60	22.23	77.77	70 - 88	
4.75	635	13.11	35.34	64.66	53 - 71	
2.36	510	10.53	45.86	54.14	42 - 58	
1.18	638	13.17	59.03	40.97	34 - 48	
0.600	513	10.59	69.62	30.38	26 - 38	
0.300	405	8.36	77.98	22.02	18 - 28	
0.150	416	8.59	86.56	13.44	12 - 20	
0.075	355	7.33	93.89	6.11	4 - 10	

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Job No.: CECTC-BBMP-KRIDL-W.No.14-2015-16 22.04.2015

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE

CLIENT	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
AGENCY	**Technical Manager (West),** KRIDL, PIU, Bangalore.
NAME OF THE WORK	Re-Construction of roads and drain at 7th B Cross Diffence Colony connecting to Munikondappa Layout in Ward No. 14, Bagalagunte, BBMP, Bangalore.
REFERENCE	EE/DD/WO/373/2014-15 Dated: 31.03.2015
SAMPLE I/D	Sample Supplied by Agency
DATE OF TESTING	22.04.2015

BITUMEN CONTENT DETERMINATION

Description	Sample 1	Sample 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	469	469.5
3. Weight of Asphalt and Mineral matter Extracted, g	31	30.5
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g	-	-
6. Weight of Bitumen Extracted, g. (corrected)	31	30.5
7. Bitumen content in %	6.20	6.10
8. Average	**6.15**	

GRADATION AFTER EXTRACTION

TABLE - 1

SIEVE SIZE	Percent Passing, %		JOBMIX
mm	Sample 1	Sample 2	Gradation
19	100.00	100.00	100
13.2	96.85	93.55	79-100
9.5	79.55	79.40	70-88
4.75	55.40	55.45	53-71
2.36	45.25	45.20	42-58
1.18	40.10	39.50	34-48
0.6	35.20	36.15	26-38
0.3	22.70	23.70	18-28
0.15	16.75	15.15	12-20
0.075	5.25	6.30	4-10

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Job No.: CECTC-BBMP-KRIDL-W.No.14-2015-16 22.04.2015

TEST REPORT ON STABILITY OF MIX

Client	:	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	:	**Technical Manager (West),** KRIDL, PIU, Bangalore.
Name of the Work	:	Re-Construction of roads and drain at 7th B Cross Diffence Colony connecting to Munikondappa Layout in Ward No. 14, Bagalagunte, BBMP, Bangalore.
Reference	:	EE/DD/WO/373/2014-15 Dated: 31.03.2015
Source of location	:	Hot mix Plant, Bangalore
Type of Mix	:	Bituminous Concrete
Date of Testing	:	22.04.2015

The results of the tests conducted on the Bituminous Concrete mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	9.35	10.10	9 Kn (min)
2	Marshal flow, mm	3.80	2.95	2 – 4
3	Percent air voids in Mineral Aggregate	13.25	14.70	13 – 15
4	Voids in Compacted Mix	4.30	5.15	3 – 6
5	Percent Voids filled with Bitumen	70.15	71.40	65 - 75
6	Density, g/cc	2.26	2.27	--

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